FW2170 User's Manual

(Product Guide)

Version 4.16(Rev.E)

Sep. 27, 2012

FlexWATCH®
(주)세연테크 Seyeon Tech Co., Ltd.

Class A Digital Device (industrial & commercial environment)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to CE and FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FW2170 User's Manual

Document Part Number: M4067-00
Document Version: 4.16(Rev.E)
Revised: September 27, 2012

About This Document

This document is prepared for users of FW2170 supplied by Seyeon Tech Co., Ltd. It is assumed that the users are familiar with Microsoft Windows operating systems and Web browsers such as Internet Explorer. It is also assumed that the users are well aware of how to install and use the network equipment such as LAN, Hub, router, and having basic knowledge of network terminologies. If you have any questions regarding network installations, please contact your network equipment vendor or network administrator or Internet service providers.

For updated contents, detailed features and other applications from Seyeon Tech, please refer to the user's manual in CD-ROM provided with the product you purchased, or visit Seyeon Tech's Internet homepage at http://www.flexwatch.com/.

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1. Product Overview

1.1. FW2170

FlexWATCH™ 2170 is a stand-alone 4ch network media decoder which converts four streams of Motion JPEG or H. 264 from 4 different FlexWATCH™ Video/Camera servers in real-time into the high quality analog signals. It support 4 screens output and the FlexWATCH™ Video/Camera input sources from the encoder device

The server of **FlexWATCH™ 2170** Network media decoder is used in combination with FlexWATCH™ video & camera servers. Users are able to use existing video matrices and other analog technology to receive video and audio from distant analog cameras or systems

FlexWATCH™ 2170 is ideal package solution with FlexWATCH™ cameras or servers for remote monitoring using TV sets and Analog monitors. Also, instead of these multi channeled servers, you can use single channel servers together. Thus, if you install cameras in remote site, you can watch the remote site using video server and **FlexWATCH® 2170** even though it might be located in a different city.

Picture 1 : FW2170

1.2. Key Features

- Decodes network video without the need of a PC
- Provides four channels of video up to 30fps decoding 1.3M per each channel.
- Single Serial interface for Voice kit. Two way voice communication will be supported by software upgrade later.
- Single RS-485, RS-232 interface for future use. It can be used for Pan Tilt Zoom device control using controller.
- Supports dynamic IP at remote site using IPCCTVDNS.
- Built-in Web server for administration.
- Advanced alarm notification and service

  When sensor or motion is triggered at **FlexWATCH™ 2170** Network media decoder invokes the 4ch Rotation view immediately and displays the alarm status.
- Factory Default Button for system initialization.

1.3. Preliminary Specification

Model		FW2170-DB
System	CPU	32bit Embedded Processor
	OS	Embedded Linux
	Flash	128M Byte
	SDRAM	128M Byte
Video	Output	HDMI : HDMI Connector Component : RCA Connector Composite : BNC Connector
	Input	M-JPEG, H.264 IP stream (JES format stream only)
Decoding Performance	Max resolution	1.3M, @1024P
	Max Rate	30 fps@1024p
Interoperable Devices		FlexWATCH®-IP Camera/NVS/NVR (FW-1xxx / 3xxx/ 5xxx series)
Audio	Codec	1ch in & 1ch out, Mono Audio 8 bit PCM (G.711-u-low), Sampling rates 8KHz, Bandwidth: 8KByte/sec Min/Max Audio Freq.: 300Hz ~ 3.4KHz
Network Protocol		HTTP, RTP/RTSP, TCP/IP, FTP, Telnet, RARP, PPPoE, PAP, CHAP, DHCP, SMTP client(e- mail), NTP
Network I/F	LAN	10/100BaseT Ethernet auto sensing
Serial I/F	RS-232 RS-485	COM : console, serial input/output RS-485 : joystick or Transparent mode
Alarm I/F	DI/DO	1 Photo-coupled Input and 1 Relay Output
Management		Web based configuration / Control Web based upgrade
Function (reserved)		Multi-Channel Circulation Various Display Mode Selection by Push Button Alarm / Status display
Operating Condition		Temperature -5℃ ~ +50℃, humidity 20~80% (non-condensing)
Power		DC 12V/1A [SMPS], max power consumption (DC12V, 600mA)
Certification		FCC / CE / KCC
Dimension(WXDXH) / Weight		148(W)X118(D)X25(H) mm / about 0.25 Kg

** All specifications are subject to change without prior notice.*

Table 1 : Specification for FW2170

1.4. FW2170 Packing List

FW-2170	1ea	
Power Supply Unit **(Power Cable & SMPS DC12V 1A Adapter)**	1ea	
CD (User's Manual, installation wizard and Pictures)	1 ea	

Table 2 : FW2170 Packing List

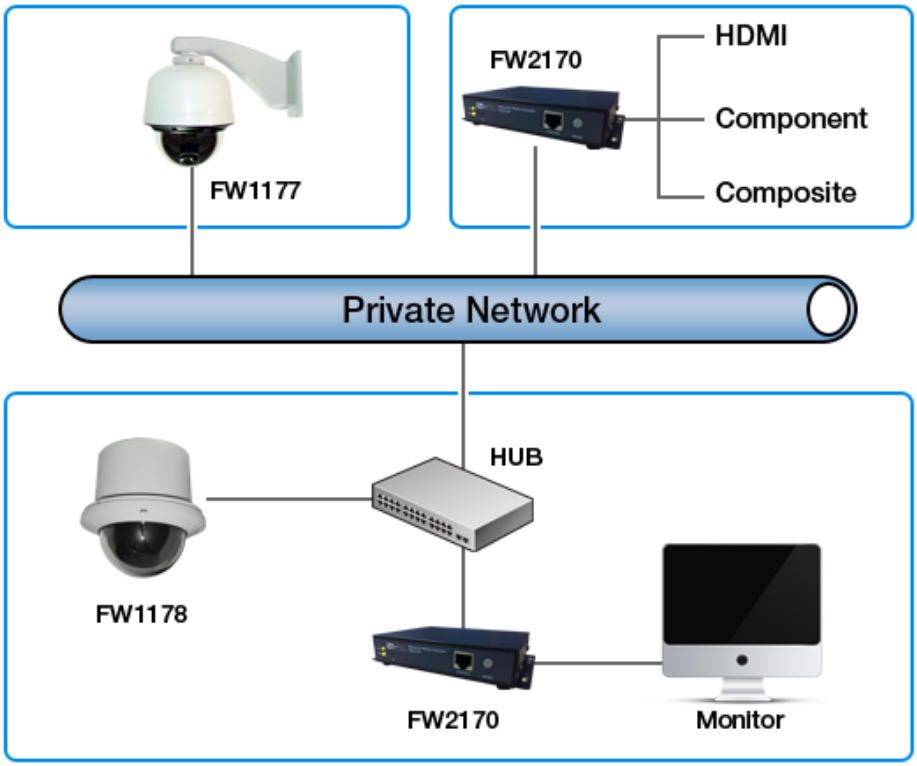
Note: Please check all the listed items are included in your package. For any missing items, please contact your local distributor.

1.5. Network Diagram

FW2170 works over IP network such as leased line, cable model, XDSL modem, PSTN modem. FW-2170 can also works over public network or private network. The network environment will vary with users' goals and needs; however, basic applications with FW2170 can be as below.

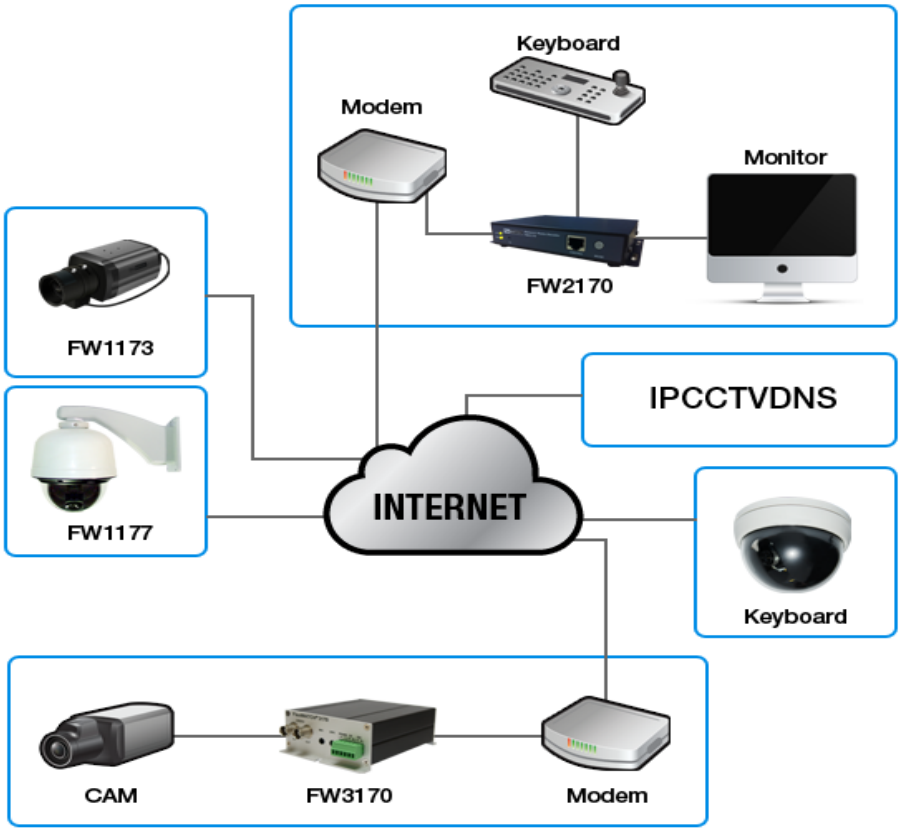
1.5.1. Private Network

Private network without Internet connection.



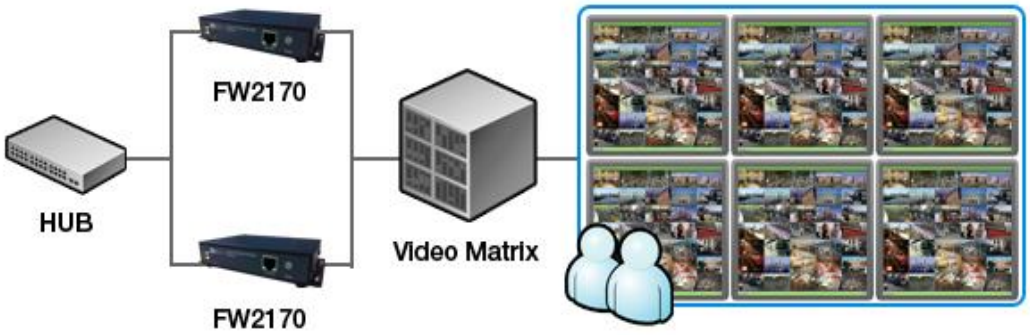
1.5.2. Wide Area Network

FW2170 is able to decode Video stream Over IP network by IP Address and domain name, and AOIP Service. Once FW2170 is assigned Dynamic IP Address, it is possible to decode Video stream from Wide Area Network.



1.5.3. FW-2170 with the existing Analog System

FW2170 decode and transmits Video stream to analog system so that it an can be applied with Video Matrix.



1.6. Application

FW2170 is born to provide reliable and flexible TCP IP network in the remote video surveillance industry. Decoded Video stream by FW2170 can be monitored on standard TV or Audio/Video Devices. Users easily monitor, search, and save Video stream by FlexWATCH^{TM} server and FW2170 efficiently.

By combining with FlexWATCH^{TM} server series, following can be suggested application area.

- Chain store, and Franchised restaurant monitoring
- Remote branch office monitoring
- Plant, Oil refinery, Power station monitoring
- Globally presented branch office monitoring
- Parking Lots, Gas Station monitoring

2. Hardware Description

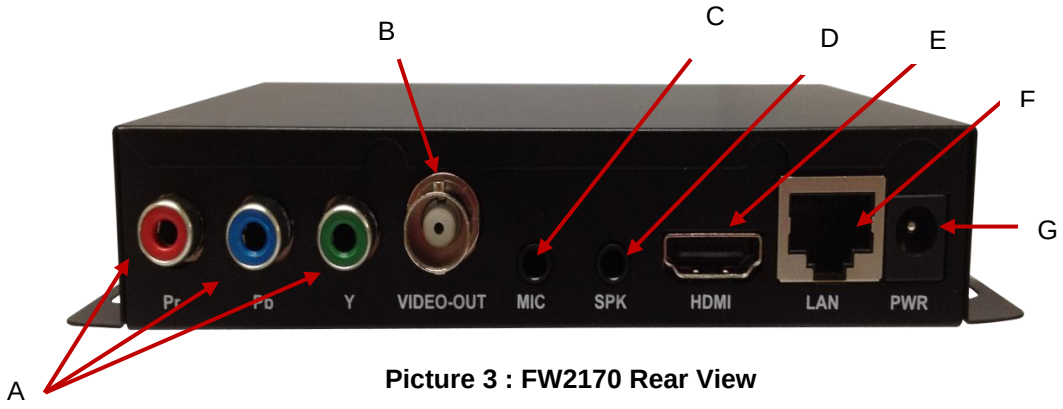
2.1. Front View

Picture 2 : FW2170 Front View

	Name	Description
A	**LAN LINK LED**	Green light blinks when LAN is physically connected
B	**Power LED**	Red light blinks when power is provided
C	**Factory Default Button**	This button can reset the factory default settings at the system. Keep pressing FD button for about 5 seconds, after reboot the system. While pressing this button, ACT LED is flickering.
D	**CONTROL**	CTL Port (RS-485, RS-232, DI, DO)
E	**Display Mode Switch**	This button changes Display Mode. As you press the button, the Display Mode will be changed one by one from Channel 1 to Channel 4. If you press the button for 2 sec., you can apply Rotation Mode directly.

Table 3 : FW2170 Front View

2.2. Rear View



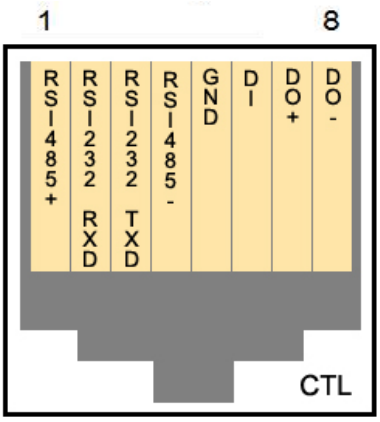
Picture 3 : FW2170 Rear View

	Name	Description
A	**Component**	Component Port
B	**V-OUT**	Composite Port (Video Output Port)
C	**MIC**	Audio Input Port
D	**SPK**	Audio Output Port
E	**HDMI**	HDMI Port
F	**LAN**	LAN Connector (10/100BaseT Ethernet auto sensing)
G	**POWER ON/OFF**	Power (DC 12V/1A [SMPS])

Table 4 : FW2170 Rear View

2.2.1. CTL Port Description

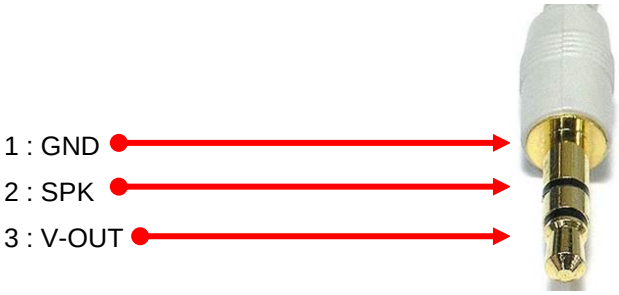
It's RS-232 port for Serial input device, Modem or Console (Hyperterminal.connection). For RS-232 connection, RXD, TXD and GND are used. For connection to PC, RXD and TXD are used. RXD and TXD should be cross to communicate properly



Picture 4 : CTL Port Description

2.2.2. Speaker V-out Jack Description

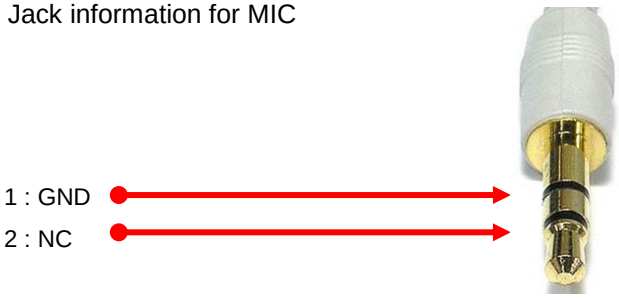
Jack information for Mono Speaker or Video Out Jack.



Picture 5 : V-out Jack

2.2.3. MIC Jack Description

Jack information for MIC



Picture 6 : MIC Jack

3. FW2170 Installation and Basic Setup

3.1. Before Installation

- Read carefully User's Manual.
- Check User's Network (IP Address, Network Mask and default gateway)
- Secure IP address for FW2170.

3.2. Factory Default Settings

The following table shows the factory default condition. Please refer to this when you need to change the values on admin menu.

	Factory Default
Admin ID	root
Admin password	root
IP address	10.20.30.40
Network mask	255.255.255.0
Gateway	10.20.30.1

Table 5 : Factory Default

Note: Factory default Admin ID and Password are all lower case letters. You can change the password with Capital letters.

3.3. Installing FW2170

Following steps are the physical installation process for FW2170.

1. Fix the FW2170 in place
2. Connect the FW2170 to the Internet cable through the LAN port.
3. Connect the power supply of FW2170.

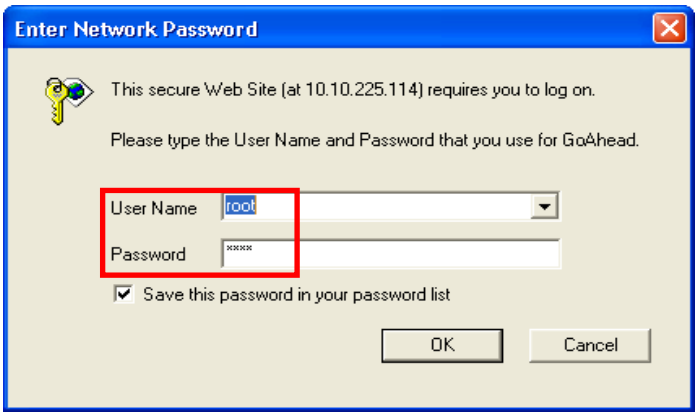
After that, you need to follow the steps below.

- Network Configuration: Refer to "IP Installer User's Manual"
- Camera Configuration: Refer to "FlexWATCH™ Admin Menu User's Manual"
- Service Configuration: Refer to "FlexWATCH™ Admin Menu User's Manual"

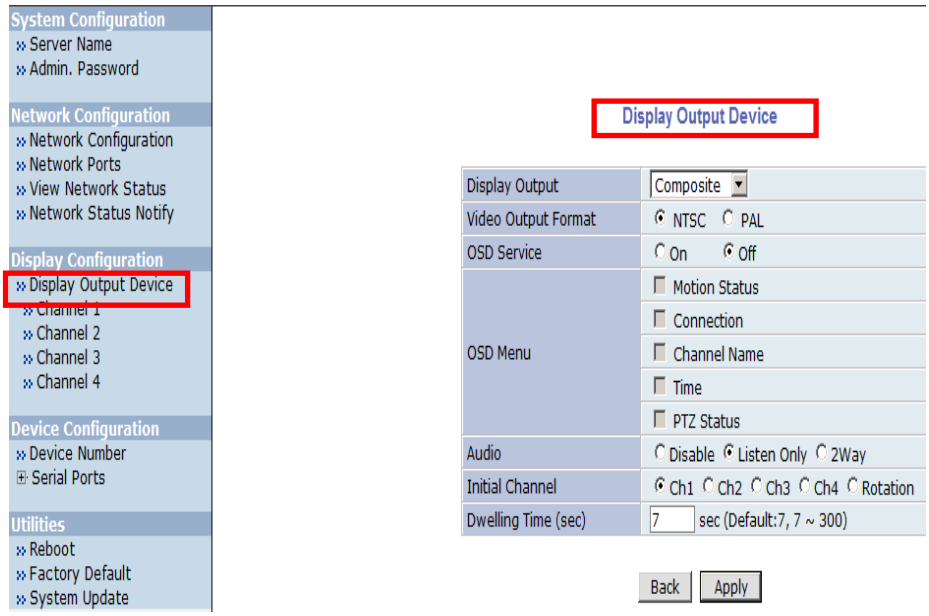
3.4 Network Configuration

1) Run Internet Explorer and input IP address of FW2170. You will see log in window as below.

Input ID and Password of Admin. (Default ID : root / Default Password: root)

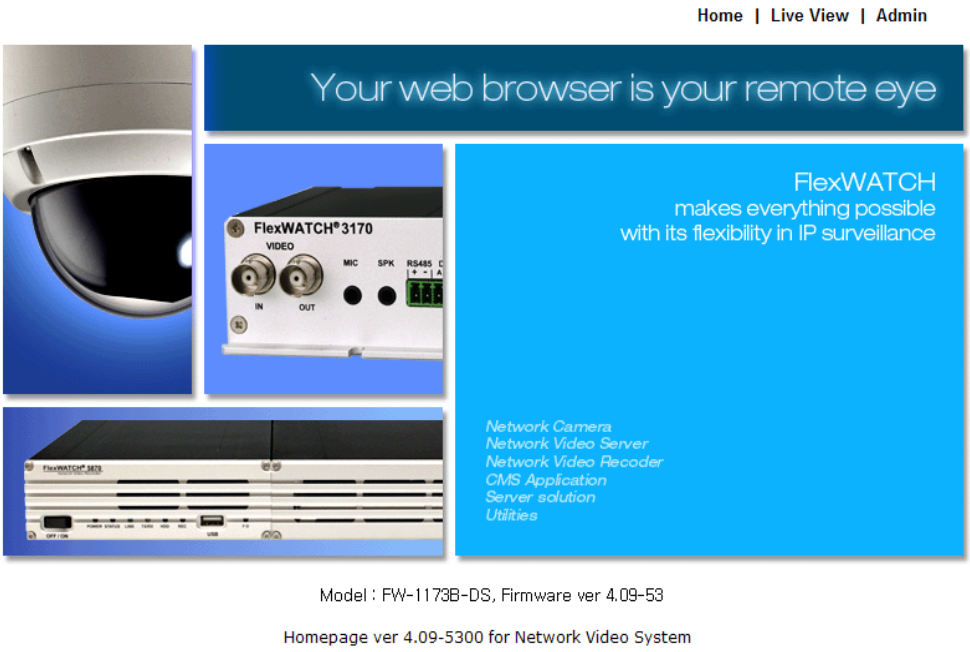


2) If you succeed in connecting to FW2170 Network Decoder System, "Display Output Device" menu will be shown on the right side immediately and whole menus on the left side. Because, you mainly need this menu "Display Output Device" while using FW2170.



4. Admin Menu

After connecting to a FlexWATCH™ server on the web browser, you'll find the web page as shown below. The rightmost item of the menu is Admin, where you can set up the most of features in the FlexWATCH™ Server you're connecting to.

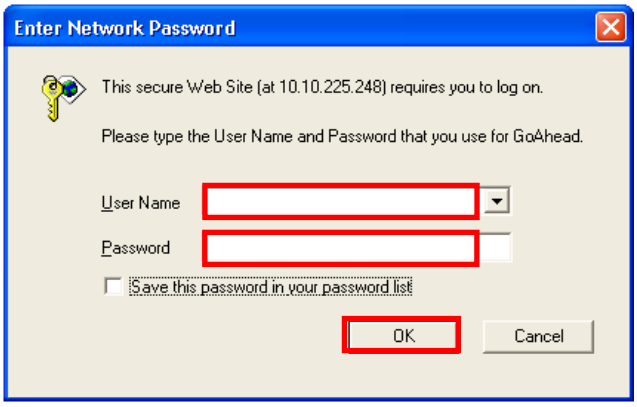


Model : FW-1173B-DS, Firmware ver 4.09-53

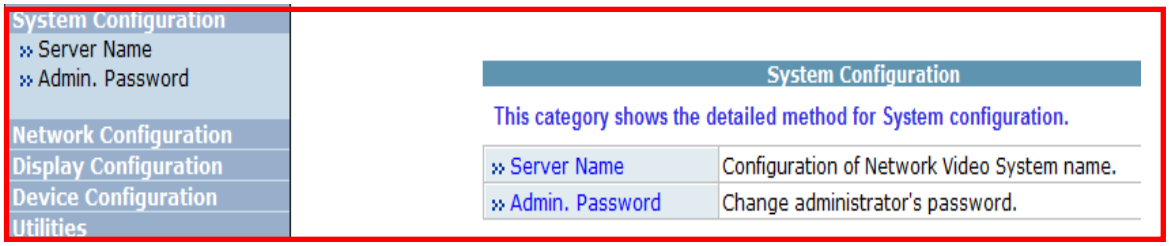
Homepage ver 4.09-5300 for Network Video System

4.1. Entering Admin Menu

Click **"Admin"** item of the menu, then you'll see a login window. In the login window, enter **"root"** for both ID and password as they are the factory defaults. Press **Enter** key or click **"OK"** button. Once logged in, you can change the password to a new one.



Now the **Admin Menu** will be displayed as shown below. This will guide you to the top level menu items, which are System, Network, Display, Device and Utilities. Clicking any of these top level menu items will display submenu items and brief descriptions.



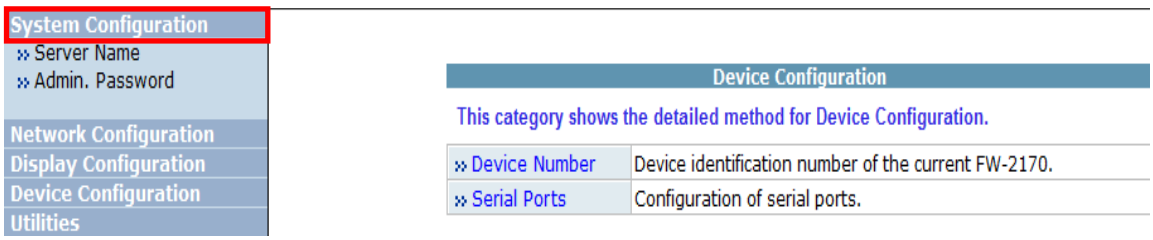
4.2. Admin Menu Structure

The following table shows the hierarchy of the Admin menu structure that we're going to deal with in this manual.

Category	Main Menu	Level 1 Sub-Menu	Level 2 Sub-Menu
System configuration	Server Name	n/a	n/a
	Admin. Password		
Network Configuration	Network Configuration	n/a	n/a
	Network Ports		
	View Network Status		
	Network Status Notify		
Display Configuration	Display Output Device	Channel 1	n/a
		Channel 2	
		Channel 3	
		Channel 4	
Device Configuration	Device Number	n/a	n/a
	Serial Ports	Transparent Mode	n/a
Utilities	Reboot	n/a	n/a
	Factory Default	n/a	n/a
	System Update	n/a	n/a

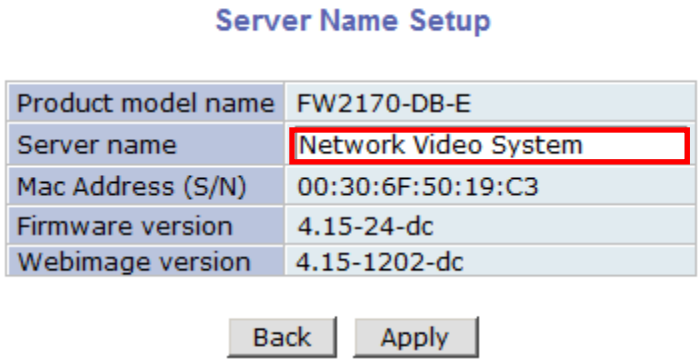
5. System Configuration Menu

When you click on **"System Configuration"** item on Admin Menu, the following sub menu will be displayed.



5.1. Server Name Setup

Click **Step 1** on **Quick Configuration**, then the following will be displayed and you will find out the system information such as model name of the FlexWATCH™ Server, server name, MAC address (serial number), firmware version, and Web image version.

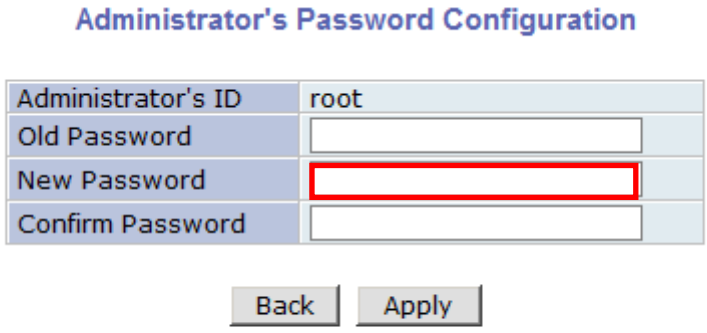


Notice : The server name can be 21 alphanumeric or 10 unicode.

As an administrator, you can change the name of the server name, but other values are not allowed to change. To change the server name, enter a new server name in the **Server Name** filed. You may use up to 21 alphanumeric or up to 10 Unicode characters. Tab or any other special characters are not allowed. Click **"Apply"** button to save the setting and it will take effect immediately.

5.2. Admin Password

To change the password for the administrator, click **Admin Password** on System Configuration menu.



Notice : The password must be alphanumeric, within 4 ~ 23 characters.

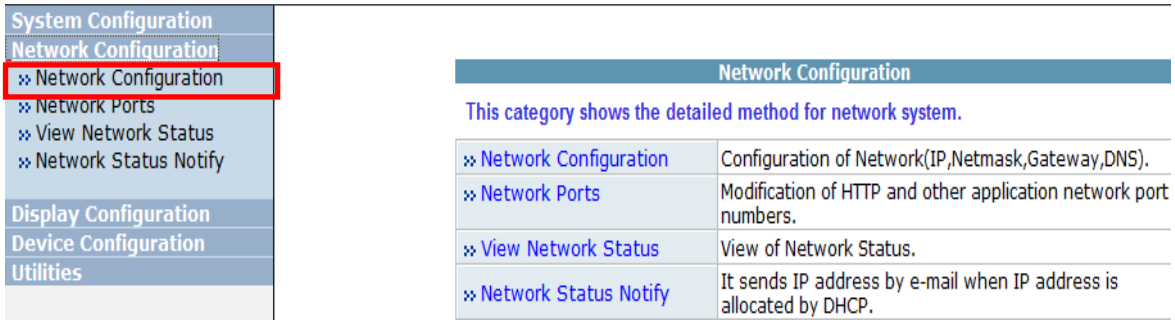
Default ID for admin account is fixed as **"root"** and not allowed to change. In **Old Password** field, enter the current password. In both **New Password** and **Confirm Password** fields, enter the same new password. The password must be between 4 and 23 alphanumeric letters. Click **"Apply"** button to put it into effect.

Because you have replaced the password with a new one, the existing network connection made with old password to FlexWATCH™ Server is lost now. You will have to reconnect to the FlexWATCH™ server using new password.

6. Network Configuration

Configuration the network is dependent on how an IP address is assigned in Ethernet-based environment, which is static IP, dynamic IP (DHCP). For wireless LAN, additional configuration is necessary to have a connection with wireless AP.

In the case of wireless models, users have to choose between wired or wireless connection. In other words, both connections can't be used at the same time. The way how to choose one of them is whether wired LAN cable is plugged into the product. When LAN cable is plugged in for longer than 5 seconds, the wired LAN is activated for data transmission. If LAN cable is unplugged more than 5secconds, wireless LAN is activated instead. If DHCP Client is selected by user, wired LAN will be activated regardless of condition of LAN cable. For network configuration, select **Network configuration** from Admin page.

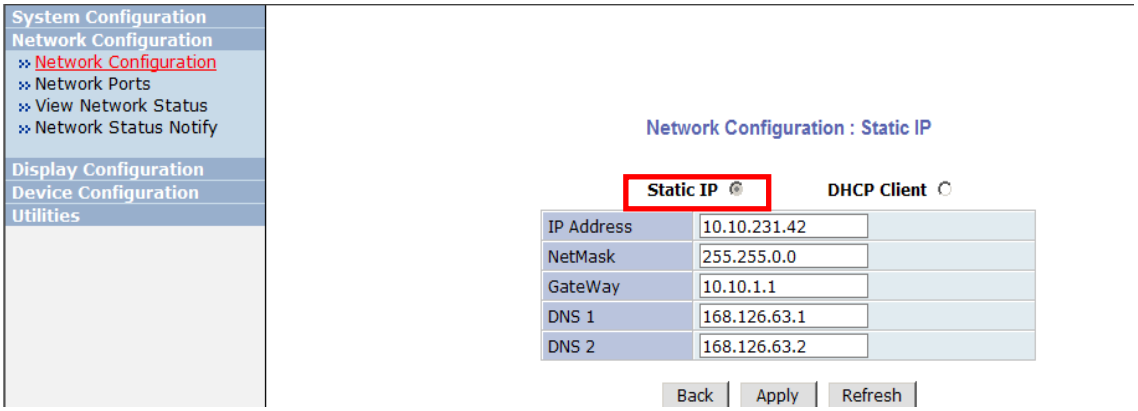


To make a connection to the Internet, it is required to figure out the type of the Internet service you're using. Depending on the service type, the network configuration can be in any of **Static IP**, **DHCP Client**. You need to set up the FlexWATCH™ Server according to your network type.

6.1. Network Configuration

6.1.1. Static IP Configuration

Selecting Network Configuration under Network configuration will show variables. Below picture is for products without wireless LAN.



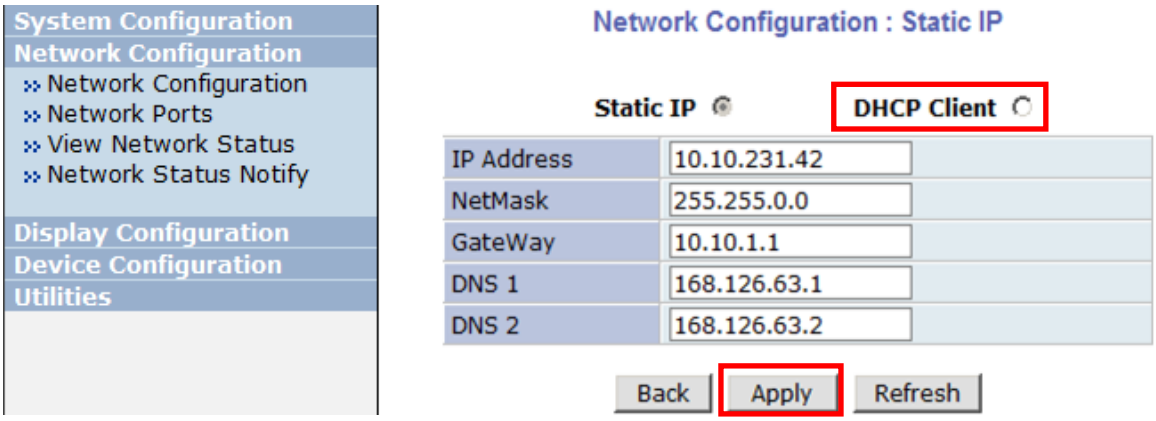
For static IP, select static IP and input values for IP address, NetMask, Gateway, DNS1, DNS2 and

click apply for saving settings. After **"Apply"**, program will ask closing web browser for updates, which will take 20~30 seconds. If **"Back"** button is pushed while configuration, all values will be discarded. If **"Refresh"** button is pushed, the program will load previous values.

> *Note: If the HTTP port number is changed to other value than default (80), make sure the new HTTP port number goes together with the FlexWATCH™ Server's Internet address. For example, when FlexWATCH™'s IP address is 192.168.1.00 and set the HTTP port to 8080, you will have to enter http://192.168.1.100:8080 to connect to the server.*

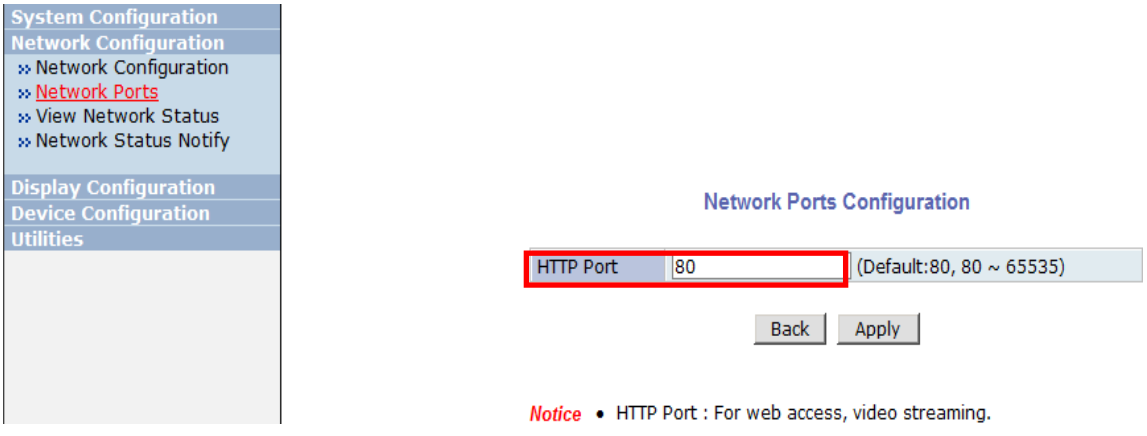
6.1.2. DHCP Client Configuration

For DHCP, DHCP server must exist in the network environment. Select **DHCP Client** from Network Configuration, click **"Apply"**.



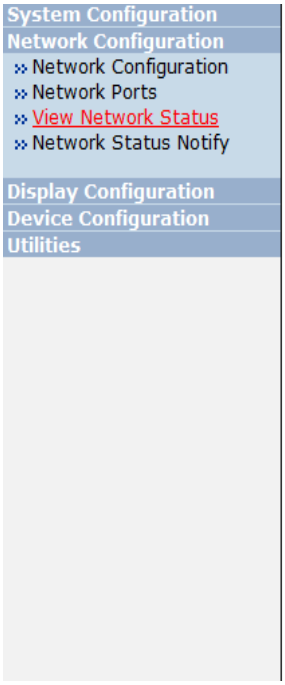
6.2. Network Ports

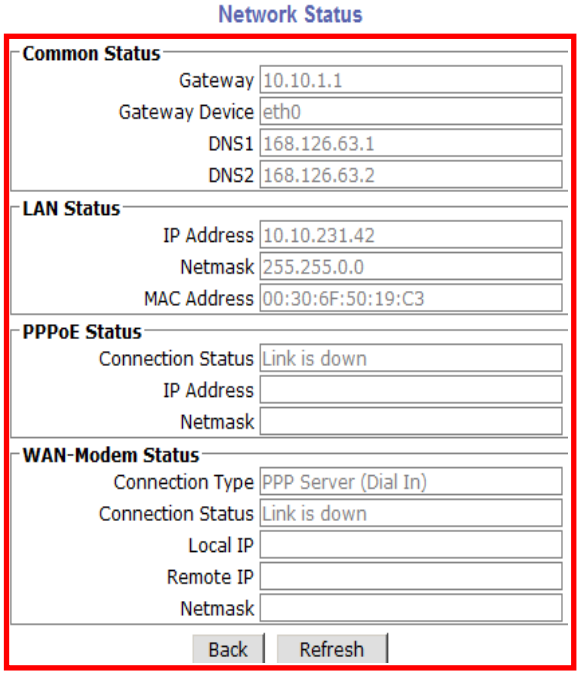
In this configuration, you set up the HTTP port for FlexWATCH™ Server to communicate with the Client PC. HTTP Port is the network port that is used when a Client PC connects to the FlexWATCH™ Server's Web page. It can be assigned between 80 and 65535 and the default value is 80.



6.3. View Network Status

This menu shows network status of FW products. Wireless LAN status will be added for wireless models.





6.4. Network Status Notify

This feature helps to send updated network status information to registered email address if any changes happen. This function will work under DHCP or PPPoE.

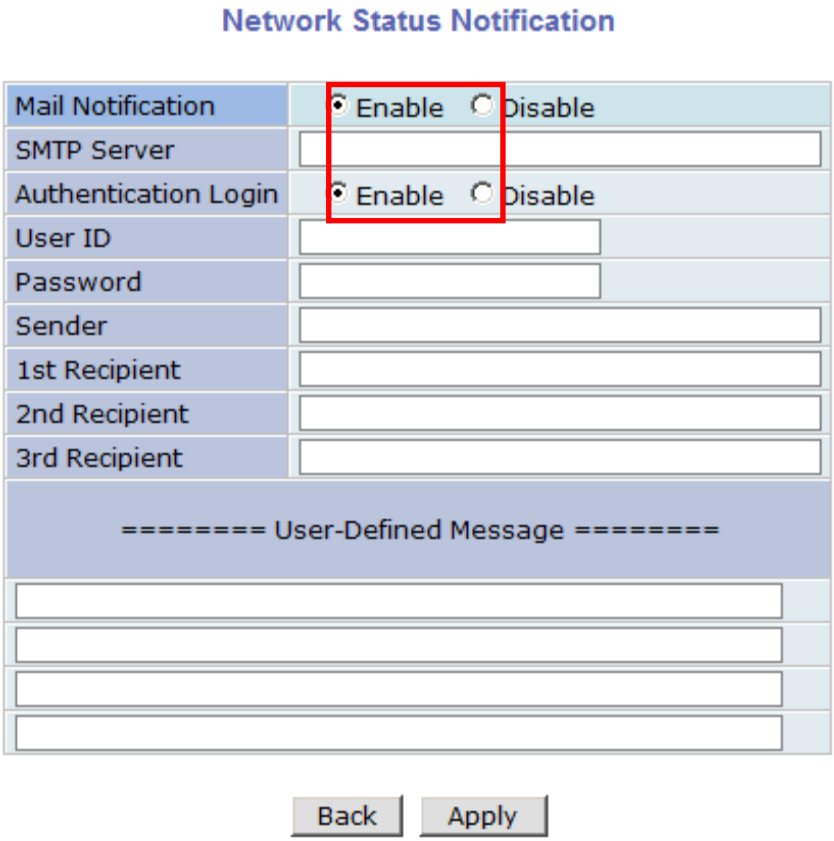
If **Network Status Notify** is set to **Enable**, FlexWATCH™ Server's network status will be emailed to a specific person in case of the following events:

- When it is set to Dynamic IP on Network Configuration menu, and the FlexWATCH™ server has been given a new dynamic IP address and connected to the network.

  Or,

- When it is set to PPP Client on WAN-Modem menu, and the FlexWATCH™ server has been connected to the network with ISP or PPP server.

To configure, click **"Network Status Notify"** on Network Configuration menu. The following window will be shown.



First, select **Enable** to use the feature. Then enter the address of the SMTP server which is needed for email service. If your SMTP server requires a user ID and a password for authentication, you will have to get them from ISP or network admin. Enter the ID and password.

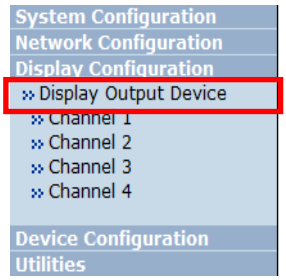
In **Sender** field, enter your email address or other meaningful words that will show the message was sent from the FlexWATCH™ server as a notification. Now enter the email addresses of the recipients in the **Recipient** fields, up to 3 persons. In the **User-Defined Message** box, you may put a message to explain why the message was sent. After finishing the setup, click **"Apply"** to save settings.

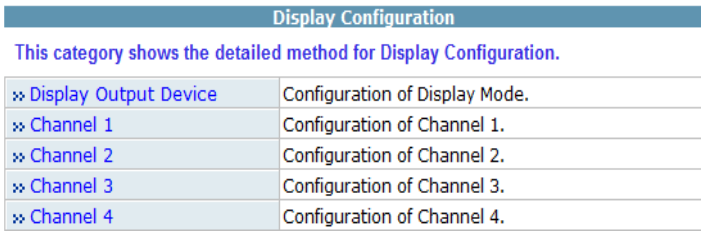
6.5

Mail Notification	**Enable**: Send email **Disable**: Do not send email
SMTP Server	SMTP Server address for email service
Authentication Login	**Enable**: user ID and password are required for SMTP server **Disable**: user ID and password are not required
User ID	User ID for SMTP server
Password	Password for SMTP server
Sender	Email address of Sender
1st / 2nd / 3rd Recipient	Email Addresses of the Recipients (up to 3 persons)
User Defined Message	Message to be included in the Notification email

7. Display Configuration

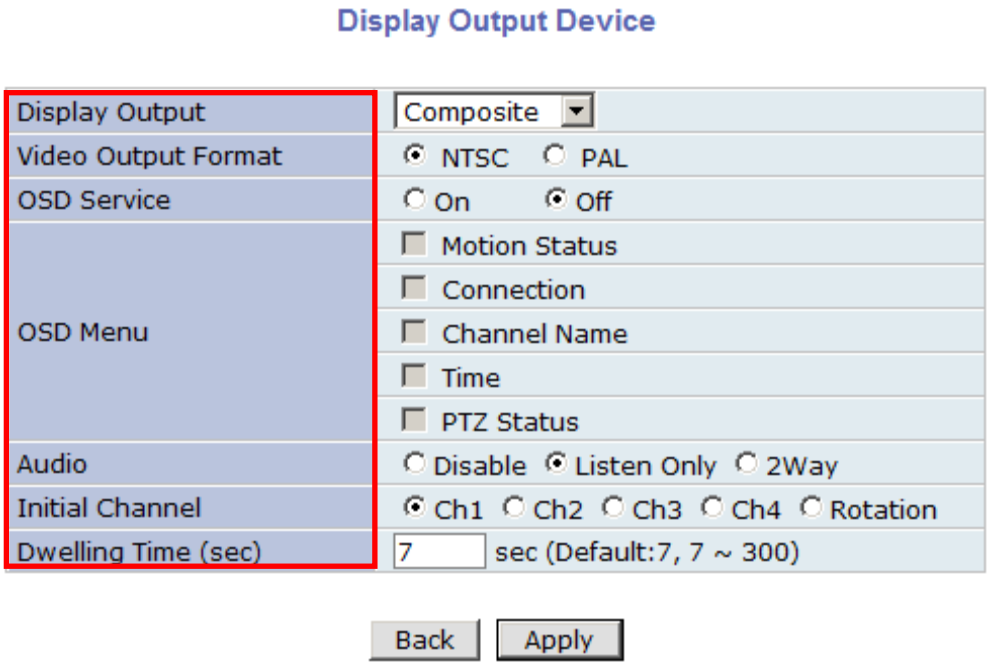
You can configurate Display mode of FW2170 connected to FlewWATCH™ cameras in this part of Display Configuration, for properly controlling analog monitor according to each of channel. Before viewing the monitor, you have to configure **Display Output Device** first and then register the information about each channel of FlewWATCH™ cameras. But FlewWATCH™ server is required in advance for video stream running.





7.1. Display Output Device

In this part, you can configure **"Display Output"**, **"Video Output"**, **"OSD Service", "Audio"**, **"Initial Channel"** and **"Channel Dwelling Time"** by choosing options. In other words, you can choose one option for each of items as below

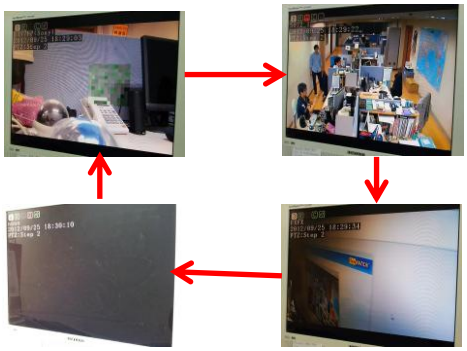


Notice : Codec needs to be set as H.264. Using other codec may create disrupted images. When using 16:9 ratio image resolution with 4:3 ratio display monitor, or vice versa, please reduce the frame rate of camera to below 15 for better performance.

Option Details for **Display Output Device Configuration** are as below.

- **Display Output:** Composite, Component, HDMI
- **Video Output Format**: NTSC, PAL
- **OSD Service**: Turn on, Turn off
- **OSD Menu**: Motion Status, Connection, Channel Name, Time, PTZ Status
- **Audio**: Disable, Listen Only, 2Way
- **Initial Channel**: Ch1, Ch2, Ch3, Ch4, Rotation

Single Channel

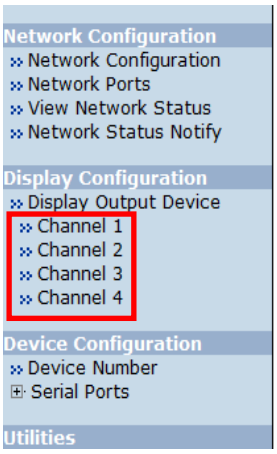


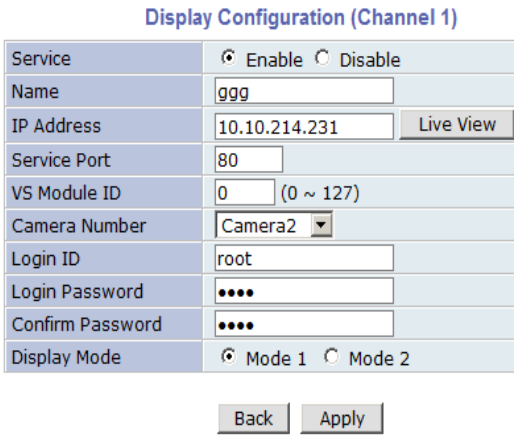
Rotation Channel

- **Dwelling Time (sec)**: The Default value is7 (7~300)

7.1.1. Channel Configuration

You can configure each of channels as below. Also you can add more Channels up to 4 Channels for viewing and controlling Cameras coincidentally connected to FW2170.



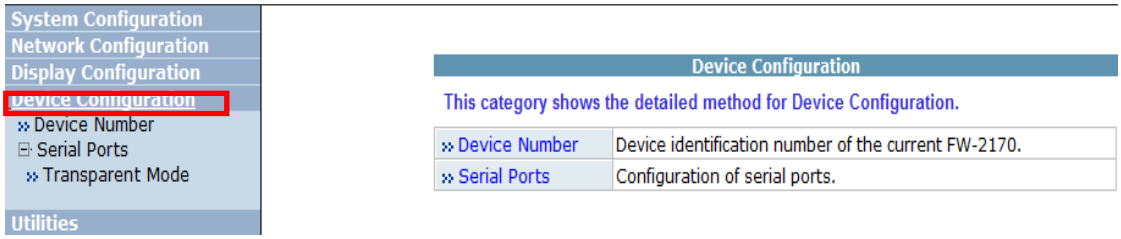


Option Details for **Channel Configuration** are as below.

- **Service**: The choice of using Channel Service or not
- **Name**: Designation of the name of Channel connected to FlexWATCH™Camera.
- **IP Address**: IP address of FlexWATCH™ camera connected to server.
- **Service Port**: The default value is 80
- **VS Module ID**: The default value is 0
- **Camera Number**: The number of the Camera connected to FW2170
- **Login ID**: ID for connecting to Admin. of FW2170
- **Login Password**: Password to login
- **Confirm Password**: Affirmation of the Password you entered
- **Display Mode**: The type of display

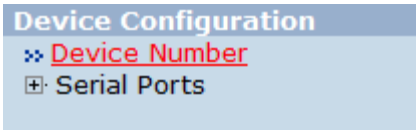
8. Device Configuration

You set up the connection between FlexWATCH™ Server and the camera in this part of configuration. That includes Video data, external devices, Input / Output, Alarm control, and etc.

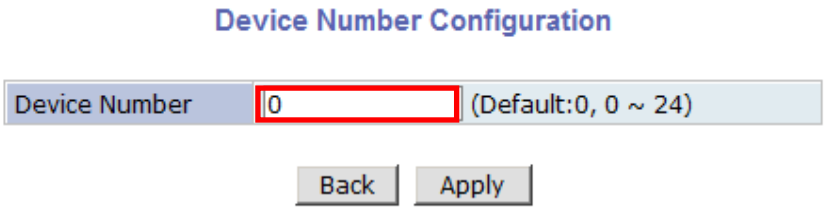


8.1. Device Number Configuration

- Click **"Device Number Configuration"** of Device Configuration.



- Input Device number of FW2170

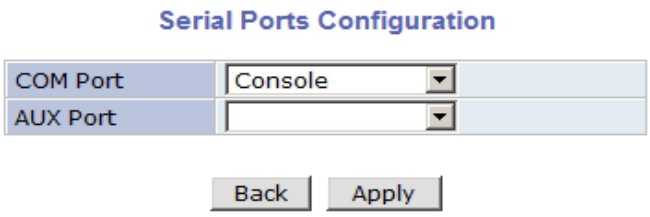


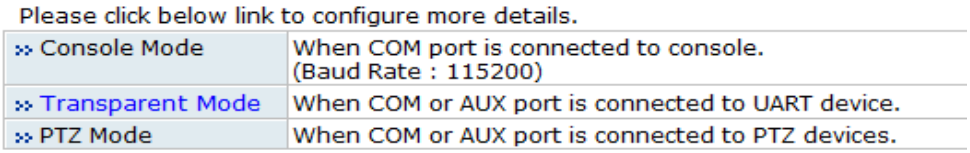
Notice : The device number(device identification number of the current FW-2170) must be in the range of 0~24.

- Click **"Apply"** button to save the change. If you do not want to save, click **"Back"** button.

8.2. Serial Ports Configuration

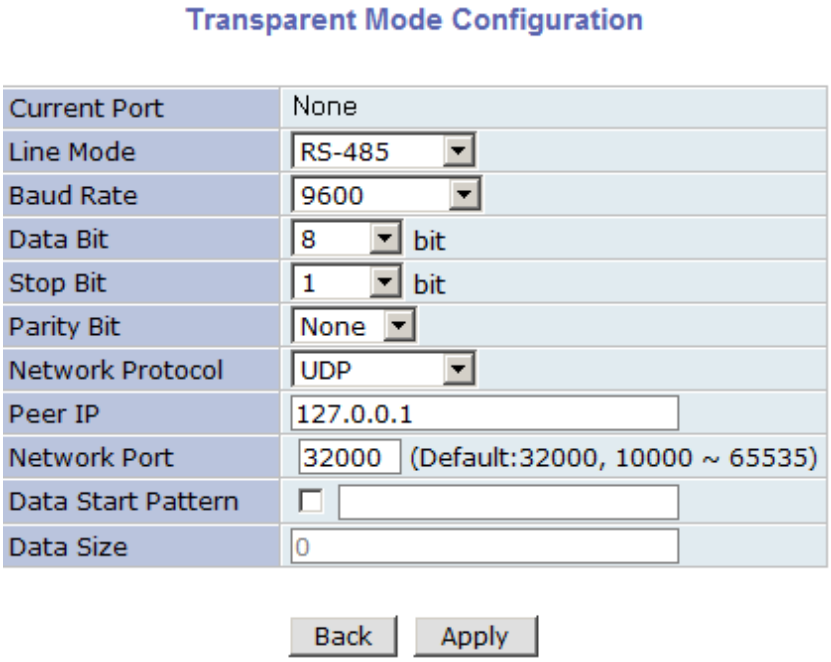
There are two serial ports configurable in the system, COM and AUX. COM port is primarily used for console, and AUX is for PTZ control, but they both can be used for other purposes when necessary.





8.2.1. Transparent Mode

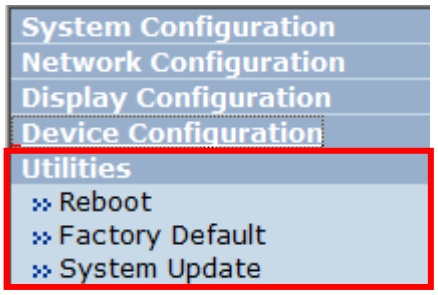
When there are two FlexWATCH™ Servers present on the network, they can act like a transparent interface between two different UART devices so that the communication between the UART devices can be made transparently without a flaw.



- **Line Mode**: The type of communication protocol
- **Baud Rate**: Data transfer rate
- **Data Bit**: The number of bits in data
- **Stop Bit**: The number of stop bit
- **Parity Bit**: Parity bit characteristic
- **Network Protocol**: The type of protocol used to send data
- **Peer IP**: IP address of other FlexWATCH™ server
- **Network Port**: Network port number of the server
- **Data Start Pattern**: Data start pattern (Not used if unchecked)
- **Data Size**: Data size in single transfer (Not used if unchecked)

9. Utilities

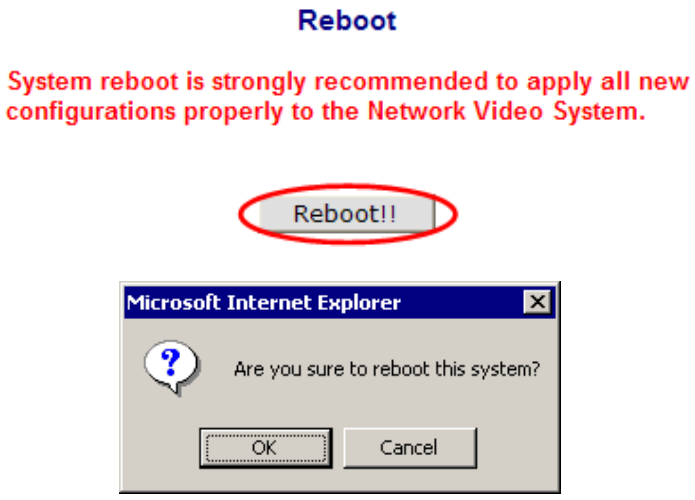
In **Utilities** part of the Admin menu, you can view the system log file, save the changed value during the configuration, reboot, restore the factory default condition, and update the system.



9.1. Reboot

It is recommended to reboot the system after making changes and saving the configuration. To reboot, click **"Reboot"** on Utilities menu. A confirmation screen will be displayed as shown Click "**Save Configuration"** button, otherwise click **"Back"** button to cancel the rebooting.

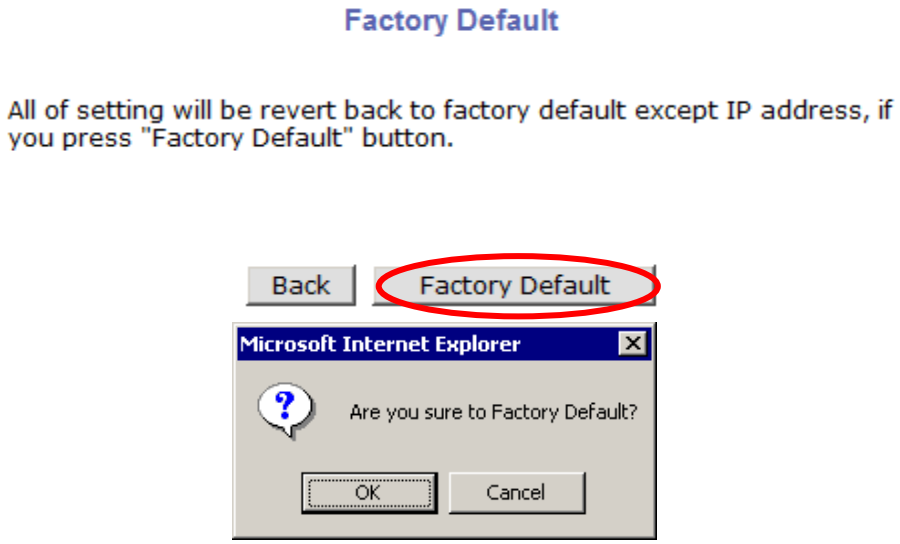
The second confirmation screen will be shown. This is only to confirm closing of web browser that FlexWATCH™ Server is on. Click **"OK"** button to close the web browser and reboot right away. If you click **"Cancel"**, the web browser is still open, but you will not be able to access the FlexWATCH™ Server until the rebooting is finished.



9.2. Factory Default

Whenever it is required to restore the configuration of Camera setup to factory default condition, you can do it here. Network configuration is not affected by this action.

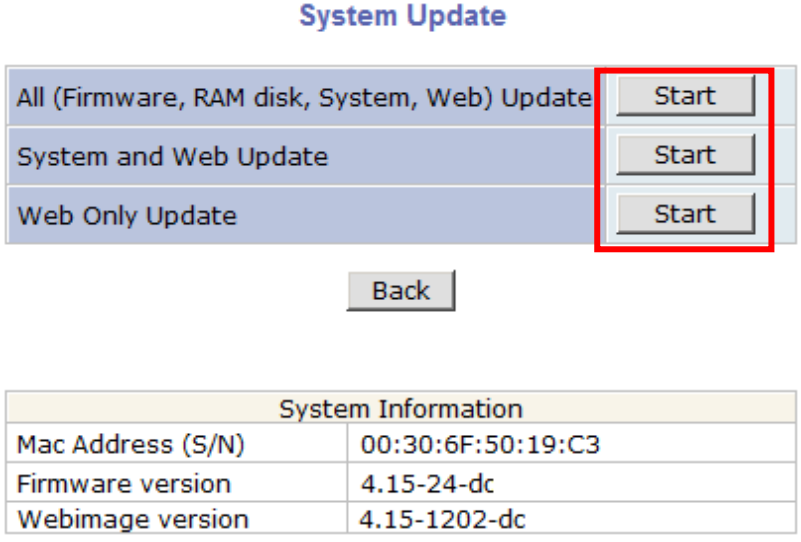
Click **"Factory Default"** on Utilities menu. A confirmation screen will be displayed as shown Click **"Factory Default"** button, otherwise click **"Back"** button to cancel it. The second confirmation screen will appear. Click **"OK"** button to restore the factory default condition right away. If you click **"Cancel"**, web browser will go back to the previous screen without any change made.



9.3. System Update

FlexWATCH™ Server's system program and data are stored in Flash memory, and it consists of Kernel Image, RAM Disk Image, System Image, and Web Image. In order to update the system of the server, you should have proper image files ready in your PC.

Click **"System Update"** on Utilities menu, then the following window will be displayed. From the Start buttons displayed, choose the one that meets your needs.



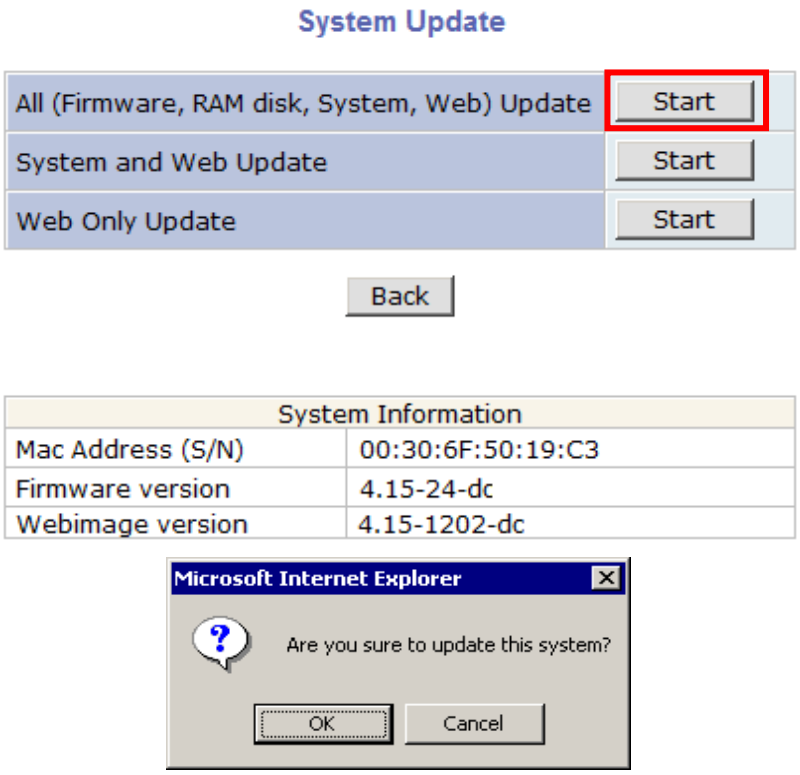
- **All (Firmware, RAM disk, System, Web) Update**: Update all four system images.
- **System and Web Update**: Only System and Web images are to be updated.

- **Web Only Update**: Only Web image is to be updated.

Up-to-date system files can be downloaded in Support page of Seyeon Tech's homepages at http://www.flexwatch.com. After the update is done, it is required to reboot the server.

9.3.1. All (Kernel, RAM disk, System, Web) Update

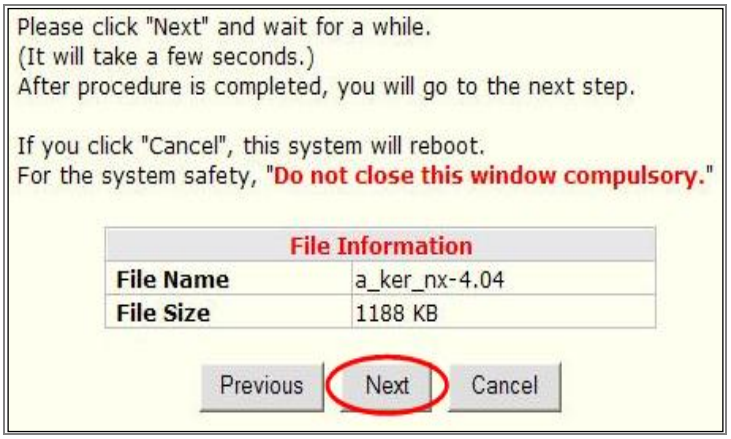
Click the **"Start"** button next to **All (Firmware, RAM disk, System, Web) Update** item on the menu, and a confirmation window will appear. Click **"OK"** button to proceed the update, otherwise click **"Cancel"**.



Note: If your web browser's pop-up blocker is enabled, your PC many not display the confirmation window above. In that case, the pop-up blocking feature of the web browser should be disabled for system update to be completed.

In the next window, enter the location of the Firmware Image file to update with. You can use the **"Browse"** button to navigate the directories in your PC to find the file. Once the image file is selected, click **"Next"** button to proceed. You can cancel the update by clicking **"Skip"** button.

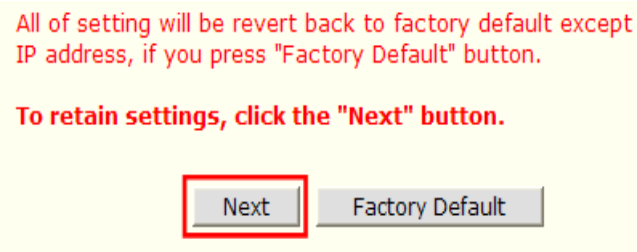
Now you can check the file name and the size in the new window. If you want to go back to the previous stage, click the **"Previous"** button. Click the **"Next"** button to update the firmware right away and proceed to next stage. If you want to stop the update process, click the **"Cancel"** button.



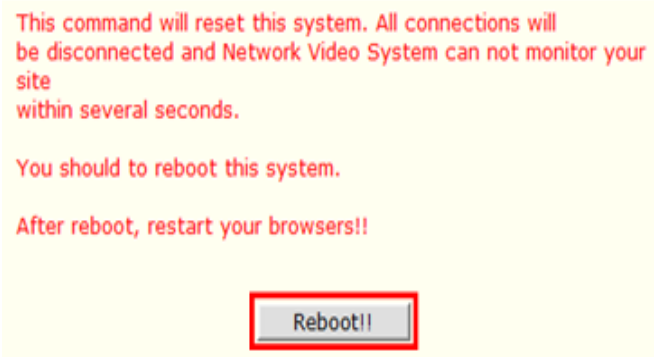
The next window is for locating the RAM Disk Update file.

Go through the same steps as in Firmware Update, and do the same in update process for **System and Web Update** files.

After all the update processes pare finished, the window for **Factory Default** is displayed. If there was no problem in the entire update processes and you want to continue, click **"Next"** button. If you're not sure about the system update, you can restore the Factory Default condition by clicking **"Factory Default"** button.



Now the final confirmation window will appear. Click **"Reboot"** button and the system will reboot.



9.3.2. System and Web Update

Click the **"Start"** button next to **System and Web Update** item on the menu, and a confirmation window will appear. Click **"OK"** button to proceed the update, otherwise click **"Cancel"**.

Go through the same steps as in **All Update** process (Kernel and RAM Disk updates are not made here). After update is done, click **"Reboot"** to start the system over.

9.3.3. Web Only Update

Click the **"Start"** button next to **Web Only Update** item on the menu, and a confirmation window will appear. Click **"OK"** button to proceed the update, otherwise click **"Cancel"**. The rest of the process is the same as in **All Update** part. After update is done, click **"Reboot"** to start the system over.